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IS 3967 (1975): Cutch [CHD 17: Leather, Tanning Materials and Allied Products]



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*Indian Standard*  
SPECIFICATION FOR CUTCH  
( *First Revision* )

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BUREAU OF INDIAN STANDARDS  
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NEW DELHI 110002

# Indian Standard

## SPECIFICATION FOR CUTCH

### ( First Revision )

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# *Indian Standard*

## SPECIFICATION FOR CUTCH

### ( *First Revision* )

#### 0. FOREWORD

**0.1** This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 12 September 1975, after the draft finalized by the Tanning Materials and Allied Products Sectional Committee had been approved by the Chemical Division Council.

**0.2** Cutch is obtained primarily from aqueous extract of the heartwood of a common Indian tree *KHAIR*, *Acacia catechu* (Linn) Willd., fam. Leguminosae. The other two species commercially exploited are *Acacia Chundra* (Roxb) Willd., and *Acacia catechuoides* Benth. This extract, when properly concentrated and cooled, deposits a crystalline substance chemically characterized as 'catechin'. On separation of this crystalline deposit, commonly known as *KATTHA*, and drying out the residual water soluble extract, a dark rusty-brown to blackish-red mass, rich in catechu-tannic acid, known as 'cutch' or 'dark catechu', is obtained as a valuable by-product. Besides catechu-tannic acid, cutch contains non-tans, insolubles, moisture and gummy matter.

**0.3** Cutch is used as a mordant in dyeing leather and as retanning material, alone or blended with other tanning materials. It is also used for dyeing and treating of fishing nets to impart them long life and for treating ropes and fabrics, which are liable to come in contact with sea and other waters, such as sailing ropes, sails, tents, canvas for travelling goods and mail bags. Cutch is also used in the manufacture of stencil and printers' ink, in oil well drilling operations for reducing the viscosity of drilling mud and for descaling of deposits in boilers. Being a powerful astringent, cutch, prepared in accordance with pharmaceutical requirements, may be used in the same way as gambier.

**0.4** This standard was originally published in 1967. In this revision, for methods of test reference has been made to IS : 5466 - 1969\*. Further, requirement for sulphated ash has been deleted.

**0.5** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing

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\*Methods of test for vegetable tanning materials.

the result of a test or analysis, shall be rounded off in accordance with IS : 2 - 1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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## 1. SCOPE

**1.1** This standard prescribes the requirements and the methods of sampling and test for cutch used for non-edible purposes, mainly in tanning hides and skins, in oil well drilling and for descaling boiler deposits.

**1.1.1** This standard does not cover the water-soluble tanning materials, obtained by extracting the leaves, young twigs and bark of several varieties of mangrove tree, and known in the trade as 'mangrove cutch'.

## 2. TERMINOLOGY

**2.0** For the purpose of this standard the following definitions shall apply, in addition to those given in IS : 1640 - 1960†.

**2.1 Acicular** — Needle-shaped. This term is generally used for describing crystals or particles in powder form.

**2.2 Analytical Strength Solution** — A solution of  $0.4 \pm 0.025$  percent tannin content.

**2.3 Cutch** — Solid mass obtained by drying the water-soluble extract, left over after crystallizing out the catechin-rich portion known as *KATTHA* from the cooled total extractives obtained from the heartwood of *Acacia catechu* Willd., *Acacia chundra* Willd. or *Acacia catechuoides* Benth., fam. Leguminosae.

**2.4 Insolubles** — The difference between the percentages of total dry residue and total solubles present.

**2.5 Magma** — Particles suspended in water to form viscous opaque mixture which may settle out on standing.

**2.6 Optically Clear Solution** — A solution in which a bright object, such as an electric lamp filament is clearly visible through a 5-cm thick layer of the solution and in which 1-cm thick layer of the solution in a beaker placed on black glass or black paper appears black and not opalescent when viewed from above in good light.

## 3. REQUIREMENTS

**3.1 Manufacture** — The material shall be made from the aqueous extract of

\*Rules for rounding off numerical values ( revised ).

†Glossary of terms relating to hides, skins and leather.



heartwood of *Acacia catechu* Willd., *Acacia chundra* Willd. or *Acacia catechuoides* Benth., fam. Leguminosae, after the separation of catechin-rich portion as commercial *KATTHA* and drying out the residual water-soluble matter.

## 3.2 Description

**3.2.1** The material shall be obtained as blocks, slabs or tablets of regular shape.

**3.2.2** The external surface of the material shall be of dull rusty-brown to blakish-red colour. When the material is broken by hand, the fractured inside surfaces shall be clean and glossy. Small air holes may appear at the broken surfaces.

**3.3 Solubility** — The material shall be partially soluble in cold water giving a brown magma and shall be completely soluble in boiling water.

**3.4 Identification** — The analytical strength solution of the material shall give a dark green colour with a one percent solution of ferric ammonium sulphate, changing to purple on making it slightly alkaline with sodium hydroxide.

**3.4.1** When examined microscopically, the material shall be almost free from minute acicular crystals characteristic of catechin.

**3.5** The material shall also comply with the requirements given in Table 1, when tested according to the referred methods of IS : 5466-1969\*.

**3.6 Keeping Quality** — The material, when stored under normal conditions and in original wrapped containers, shall continue to satisfy the characteristics prescribed in Table 1 for a minimum period of six months from the date of packing by the manufacturer.

NOTE — Suitable precautions shall be taken during storage to protect the material from high humidity and temperature.

## 4. PACKING AND MARKING

**4.1** Unless otherwise agreed to between the purchaser and the supplier, the net mass of the material, packed in wooden cases wrapped in gunny cloth, shall be 50 kg each.

NOTE — Generally, the material shall be in the form of blocks weighing 50 kg, slabs of 3 kg or tablets of 1 or 0.5 kg, or in pulverized form.

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\*Methods of test for vegetable tanning materials.

TABLE 1 REQUIREMENTS FOR CUTCH

( Clause 3.5 )

SL No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST ( REF TO CL NO. IN IS : 5466 - 1969* )
(1)	(2)	(3)	(4)
i)	†Tannins, percent by mass, <i>Min</i>	60	10
ii)	†Non-tannins, percent by mass, <i>Max</i>	34	9
iii)	Moisture, percent by mass, <i>Max</i>	14	6
iv)	†Insolubles, percent by mass, <i>Max</i>	1.7	11
v)	‡Iron, mg per 100 g, <i>Max</i>	5	14
vi)	Copper, mg per 100 g, <i>Max</i>	5	15
vii)	‡Colour:		
	a) Yellow/red, <i>Min</i>	1.2	13
	b) Red, <i>Max</i>	8	
viii)	pH of analytical strength solution, <i>Min</i>	4.0	12

\*Methods of test for vegetable tanning materials.

†Calculated on moisture-free basis.

‡These characteristics shall be tested only when the material is required for tanning and dyeing of leather.

**4.2 Marking** — The packages shall be marked with the following information:

- Name of the material;
- Net mass of the material;
- Manufacturer's name or recognized trade-mark, if any, or both; and
- Date of packing.

**4.2.1** The packages may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Marks may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

## 5. SAMPLING

**5.1 Preparation of Test Samples** — Representative test samples of the material shall be prepared as prescribed in Appendix A and their conformity to the requirements of this standard shall be judged as prescribed in 5.3.

### 5.2 Number of Tests

**5.2.1** Test for the determination of tannins, non-tannins, moisture and insolubles shall be conducted on each of the individual samples.

**5.2.2** Tests for the determination of all other characteristics specified shall be conducted on the composite sample.

**5.3 Criteria for Conformity** — The lot shall be declared as conforming to the requirements of the specifications, if all the test results on individual as well as the composite samples meet the relevant stipulations for the different characteristics.

## A P P E N D I X A

( Clause 5.1 )

### A-1. SCALE OF SAMPLING

**A-1.1 Lot** — The material offered for inspection at one time shall constitute a lot.

**A-1.1.1** Samples shall be tested for each lot for ascertaining conformity of the material to the requirements of this specification.

**A-1.2** The number ( $n$ ) of packages to be chosen from a lot shall depend on the number of packages in the lot ( $N$ ) and shall be in accordance with Table 2.

**A-1.3** These packages shall be chosen at random from the lot. To ensure the randomness of selection, a random number table\* as agreed to between the purchaser and the supplier shall be used. In case such a table is not available, the following procedure shall be adopted:

Arrange all the packages in the lot in a systematic manner and starting from any package, count them as 1, 2, 3, etc up to  $r$  and so on, where  $r$  is equal to integral part of the value of  $N/n$ . Every  $r$ th container thus counted shall be withdrawn until the requisite number of packages is obtained to give the samples for the test.

\*See IS : 4905-1968 Methods for random sampling.

**TABLE 2 NUMBER OF PACKAGES TO BE  
SELECTED FOR SAMPLING**

( Clause A-1.2 )

NO. OF PACKAGES IN THE LOT	NO. OF PACKAGES TO BE CHOSEN
$N$	$n$
(1)	(2)
3 to 15	3
16 to 40	4
41 to 65	5
66 to 110	7
111 and above	10

## A-2. DRAWING OF SAMPLES

**A-2.1** For taking out the material from the container, the latter shall be opened and, by means of a suitable hammer, break a wedge-shaped piece of solid extract from the mass so that, as nearly as possible, a proportionate amount from the centre and side of the container is taken. These wedge-shaped pieces should be about the same size and mass of at least 500 g. The cutch sampled as above shall be collected on a large sheet of clean, brown paper, broken up into pieces not larger than 10 mm in diameter, well-mixed to form a composite sample and quartered down until only sufficient quantity remains for filling the three wide-mounted clean, dry sample bottles with not less than 300 g of the cutch.

**NOTE** — Samples of cutch for analysis should not be put in sacks or paper containers; they should be put in clean glass bottles only and so sealed that they do not lose or gain moisture. The samples shall not be ground, otherwise less in moisture content may take place.

**A-2.2** One set of these composite samples representing the  $n$  containers selected shall be marked for the purchaser, another for the supplier and the third for being used as a referee sample.

**A-2.3** The remaining portion of the material from each container shall be divided into three equal parts, each forming an individual sample. One set of individual samples representing the  $n$  containers selected shall be marked for the purchaser, another for the supplier and the third for being used as a referee sample.

**A-2.4** All the individual and composite samples shall be immediately transferred to separate containers, sealed airtight and labelled with full identification particulars, such as manufacturer's name or trade-mark, date of packing of the material, batch number (if available), date of sampling and sampler's name.

NOTE — The time taken from the opening of original containers to the sealing of samples shall be as short as possible, care being taken to protect the sample from moisture and other adventitious contamination.

**A-2.5** The referee test samples consisting of a composite sample and a set of  $n$  individual samples shall bear the seal of both the purchaser and the supplier. They shall be kept at a place agreed to between the purchaser and the supplier to be used in case of any dispute between the two.

### **A-3. PREPARATION OF TEST SAMPLES**

**A-3.1** Grind the sample as described in 4.2 of IS : 5466 - 1969\*.

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\*Methods of test for vegetable tanning materials.

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